Original Article

Impact of case study-based teaching on academic enthusiasm of midwifery students toward ectopic pregnancy: A cross-sectional study

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Abstract

Background & Objective: There has always been controversy surrounding the teaching of diagnostic and treatment measures for novel diseases and rare treatment side effects through articles. Efficient training methods are one of the effective factors in students' academic enthusiasm. The present study was conducted to investigate the impact of case study-based training on the academic enthusiasm of midwifery students.

Materials & Methods: This cross-sectional interventional controlled study was conducted on 20 midwifery students of Ilam University of Medical Sciences, Ilam, Iran, over two semesters. Sampling was carried out in the form of the total population sampling method, and the samples were randomly assigned to the intervention and control groups. The intervention group underwent routine training and the review of case report articles on rare types of ectopic pregnancy, whereas the control group only received routine training. Data were collected through a demographic form and the Academic Enthusiasm Questionnaire. Data analysis was performed in SPSS21 software. Independent t-test was used for inter-group comparison and paired t-test for intra-group comparison.

Results: The results of comparing inter-group and intra-group mean scores of academic enthusiasm showed no significant difference between the intervention and control groups in either phase one or phase two of the study (P<0.05).

Conclusion: Case study-based teaching of ectopic pregnancy had no impact on the academic enthusiasm of midwifery students in the clinical environment. Further studies are recommended to explore how case report articles on different topics affect the academic enthusiasm of students in other medical sciences in clinical settings.

Keywords: Education, Case Study, Ectopic Pregnancy

Introduction

The patient's life in rare cases of ectopic pregnancy can now be saved with the correct intervention approach (1). There are some controversies regarding the diagnostic and therapeutic measures adopted for scarce types of ectopic pregnancy (2). Therefore, being familiar with efficient methods in this field is crucial. Case report articles are effective in clinical education by sharing an educational experience in the management of rare or novel clinical conditions (3).

Case report articles are a type of evidence-based medical development that relies on learning problem-solving skills (4, 5), leading to the formation of clinical questions and an increase in clinical experiences (3). These articles include tips and details of clinical experiences that are rarely found in books (6). They act as the first line of introducing treatments and recognizing rare side effects of treatment by sharing a clinical educational experience (3).

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Case report articles, as a teaching tool (7), are an integral part of the clinical education of students and faculty (3). In a review article, aimed at examining the advantages and disadvantages of case reports articles, it has been stated that such articles are entertaining and appealing to readers, and readers are encouraged to review these articles more than the other types of articles (8). In another review study (2012), it has been mentioned that case reports are popular and favored by readers and convey a higher visual appeal and readability compared to a real case (6). Packe et al. (2017) examined medical students and reported that training students in clinical environments through writing and reading case report articles led to the stimulation and enthusiasm of students to obtain a scientific perspective toward clinical work (7).

Academic enthusiasm is a multi-dimensional term and emphasizes positive feelings towards education, cognitive psychology in learning and related behaviors, and accomplishing assignments on time and willingly (9). It contributes to academic progress and higher-grade point average (10), the development of positive feelings towards the field of study (11), and participation in educational activities for learning (12).

Medical students often engage in writing and presenting case reports as part of clinical department education to gain scientific skills (7). Writing and reviewing these articles arouse students' passion to gain knowledge and perform research to improve effectiveness and safety in clinical practices (4). However, there are contradictions in this regard; some authors believe that all case report articles cannot be considered a means of generating enthusiasm in the readers; rather, in addition to describing an interesting disease, they should serve to advance knowledge about a clinical issue (13).

Despite all the agreement on the positive effects of case report articles on the provision of medical and educational services for students, there is still controversy about whether all these articles arouse enthusiasm, interest, and positive feelings toward acquiring new knowledge and learning. On the other hand, the articles that have examined the positive feeling and passion for writing and reading case report articles have included only medical students and specialists; hence, it is imperative to examine these feelings among students in other medical fields who encounter novel illnesses and uncommon treatment side effects in clinical settings. For this purpose, the present study was conducted to investigate the effect of case study-based teaching on the academic enthusiasm of midwifery students toward rare types of ectopic pregnancy.

Materials & Methods

Design and setting(s)

The present cross-sectional interventional controlled study was carried out from January 2021 to January 2022 over two semesters at Ayatollah Taleghani Hospital in Ilam City, Iran.

Participants and sampling

The participants were undergraduate midwifery students and were considered eligible if they had taken the course on surgical and internal diseases for the first time and attended apprenticeship meetings where articles were read. On the other hand, the students who failed to participate in the pre-test or post-test were excluded from the study. Apprenticeship of surgical and internal diseases was chosen as the intervention because of the fact that in the midwifery curriculum, familiarization with different types of ectopic pregnancy is one of the educational objectives of this course.

Due to the limited number of midwifery students at Ilam University of Medical Sciences, the total population sampling method was employed, and the samples were selected from all fifth-semester midwifery students (n=20).

Tools/Instruments

The required data were collected through a demographic form and the Academic Enthusiasm Questionnaire. This 15-item questionnaire has three subscales of behavioral desire, emotional desire, and cognitive desire. The total score of each subscale is obtained by summing the item scores of the same subscale and the overall score of the questionnaire by the total scores of all subscales (14). In this study, the reliability of this tool was determined by the test-retest method through reproducibility (intraclass correlation coefficient) and internal consistency (Cronbach's alpha coefficient). Initially, 10 midwifery students who did not participate in the study completed the questionnaire, and 10 days later, the same individuals filled out the questionnaire again. As a result, reproducibility was obtained at 89% and Cronbach's alpha coefficient at 86%.

Data collection methods

Students were randomly assigned to either the control or intervention group based on the order of their student numbers. The students were blind to the study group until the beginning of the research (Figure 1).

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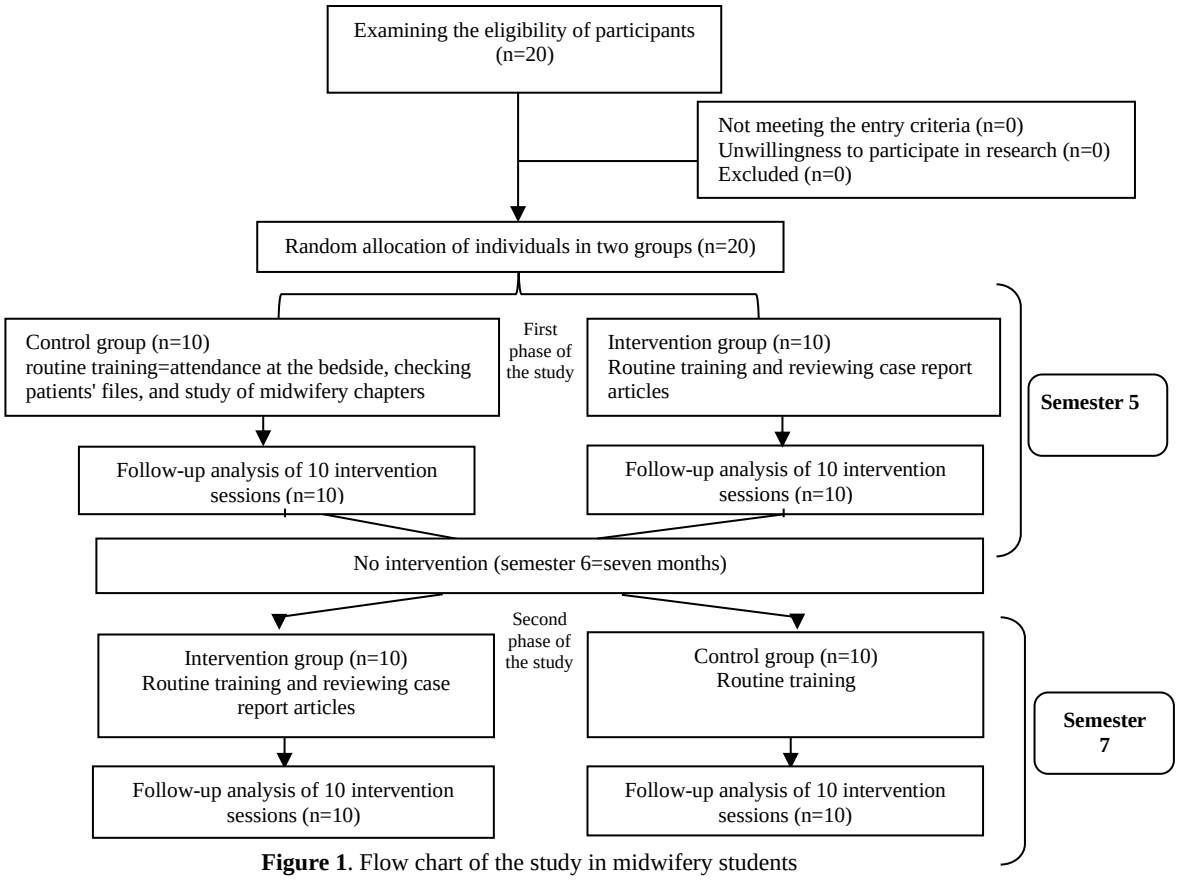


Figure 1. Flow chart of the study in midwifery students

Before starting the apprenticeship, the clinical instructor (the first author) searched reliable scientific databases and selected articles that were related to rare types of ectopic pregnancy. Afterward, the articles were given to the panel of experts (including five members of the faculty of the Department of Gynecology and Obstetrics), who selected five articles that were most consistent with the topic of the study. The criteria for the selection of articles were being published within the last five years, in journals with at least National Research Scientific Index, and in the Persian language (to be easy-to-read for students), as well as being indexed in one of the scientific databases of Scopus, ISC, Google scholar, Magiran, and Embase.

All students in both groups completed the geometrographic form and the Academic Enthusiasm Questionnaire before the intervention. Subsequently, the responsible professor provided the selected 5 articles to the 10 students participating in the intervention group and requested them to read all the articles. In 10 sessions, different parts of the articles, including the abstract, introduction, case report, discussion, and conclusion, were discussed for 30-45 min with a focus on the clinical content in the apprenticeship. In addition, related content in the pregnancy and childbirth coursebook (reference book) was reviewed. Immediately after the intervention, the students in both groups filled out the Academic Enthusiasm Questionnaire again.

Data analysis

Data analysis was performed in SPSS21 software. The normality of the quantitative data was checked using the Kolmogorov-Smirnov test ($P>0.05$ for all variables). An independent t-test was carried out for the comparison of means between the two groups, while a paired t-test was used to compare pre-test and post-test means in each group. A p-value of less than 0.05 was considered significant.

Results

Participation in two phases of the study was 100%. There was no statistically significant difference between the intervention and control groups in terms of individual and academic characteristics ($P<0.05$), which indicated the homogeneity of the two groups (Table 1).

Intra-group comparison (pre-post) of the mean ± SD of the academic enthusiasm score in phases one and two of

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the study showed that there was no significant difference between the pre-test and post-test scores in either group (P<0.05) (Table 2).

Based on the inter-group comparison in the first phase of the study, no significant difference was observed between the intervention and control groups in the pre-test (44.60±10.96 vs 44.10±9.04) and the post-test (53.20±13.38 vs 46.00±9.48) scores. Likewise, in the second phase of the study, there was no significant difference between the intervention and control groups in the pre-test (48.10±9.19 vs 45.60±12.32) and the post-test (50.7±10.09 vs 45.00±12.01) scores (P<0.05) (Table 2).

Table 1. Demographic characteristics of students in control and intervention groups

Characteristics	Control group (n=10)	Intervention group (n=10)	Sig	Characteristics	Control group (n=10)	Intervention group (n=10)	Sig
Age (years), mean (standard deviation)	24.70 (4.90)	23.10 (1.79)	t=0.7 †P=1.000	**Mean (standard deviation)**	15.02 (1.25)	15.45 (1.70)	t=0.3 †P=0.523
Birth order			X^2=0.7 ‡P=0.089	**Economic status**			X^2=0.0 ‡P=1.000
First	2 (20%)	5 (50%)		Low	1 (10%)	-	
Second	4 (40%)	4 (40%)		Medium	7 (70%)	8 (80%)	
Third and above	4 (40%)	1 (10%)		High	2 (20%)	2 (20%)	
Number of siblings			X^2=0.08 ‡P=1.000	**Marital status**			X^2=0.5 §P=0.606
One	2 (20%)	2 (20%)		Single	7 (70%)	8 (80%)	
Two	3 (30%)	4 (40%)		Married	3 (30%)	2 (20%)	
Three and above	5 (50%)	4 (40%)		**Non-native student**	7 (70%)	3 (30%)	X^2=0.2 †P=0.074
Paternal education level			X^2=0.02 ‡P=0.319	**Maternal education level**			X^2=0.7 †P=0.424
Illiterate	2 (20%)	-		Illiterate	1 (10%)	1 (10%)	
Elementary school	1 (10%)	-		Elementary school	2 (20%)	3 (30%)	
Middle school	-	2 (20%)		Middle school	1 (10%)	2 (20%)	
High school	3 (30%)	3 (30%)		High school	2 (20%)	3 (30%)	
University	4 (40%)	5 (50%)		University	4 (40%)	1 (10%)	
Extracurricular activities	7 (70%)	4 (40%)	X^2=0.5 §P=0.370	**Interest in the field of study**	4 (40%)	3 (30%)	X^2=1.08 §P=1.000

The data in Table 1 represent the number (percentage) unless otherwise specified.
† independent t-test
‡Chi-square test for trend
§ Fisher's exact test

Table 2. Comparison of the mean score of students' academic enthusiasm before and after reading the case reports of ectopic pregnancy

Group	Variable	Intervention (n=10) Mean (standard deviation)	Control (n=10) Mean (standard deviation)	Intergroup comparison P-value‡ (95% CI†)
First phase of the study				
Academic enthusiasm score before the intervention		44.60 (10.96)	44.60 (9.04)	0.913 (-9.97 to 8.97)
Academic enthusiasm score after the intervention		53.20 (13.37)	46.00 (9.48)	0.184 (-18.18 to 3.78)
Intragroup comparison, P-value§ (95% CI†)		0.082 (-18.54 to 1.34)	0.477 (-7.69 to 3.89)	
No intervention=sixth semester				
Second phase of the study				
Academic enthusiasm score before the intervention		48.10 (9.19)	45.60 (12.32)	0.614 (-12.81 to 7.78)
Academic enthusiasm score after the intervention		50.10 (7.09)	45.00 (12.01)	0.267 (-14.52 to 4.33)
Intragroup comparison, P-value§ (95% CI†)		0.393 (-7.04 to 3.04)	0.168 (-0.32 to 1.51)	

†95% Confidence interval
‡Independent t-test
§Paired t-test

Discussion

The results of the present study demonstrated that routine training along with case study-based teaching did not affect the academic enthusiasm of midwifery students compared to routine training that included attending the bedside, checking patient files, and studying midwifery chapters.

Based on the results of the current study, reviewing case report articles had no effect on students' academic enthusiasm. Özçakar et al. stated that not all case report

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articles led to the reader's enthusiasm to learn about a new clinical situation, but those articles were exciting that raised the reader's awareness of an important clinical issue (13); these results were consistent with those of the present study. Packe et al. (2017), in a study aimed at investigating the educational value of case reports from the point of view of medical students, reported that presenting and writing case reports encouraged and inspired students to ask themselves what they had learned and made them enthusiastic about providing a scientific perspective for clinical work; moreover, they found that the improvement of patients with novel treatment strategies adopted in the case reports was exciting and pleasant for the students (7).

Nissen and Wynn (2012) mentioned that case reports were considered a clinical practice, described a real case in the medical world, and led to the visual appeal and readers' interest in a real case (6). Nissen and Wynn (2014) evaluated the merits and drawbacks of case reports and found them engaging, capturing readers' interest and excitement. According to the results of their study, case reports could motivate readers to spend more time gaining knowledge about new clinical issues. They also reported that such articles might encourage readers to spend more time reading them to gain knowledge about novel clinical issues (8).

Caban-Martinez et al. (2012) found that these articles were intended to expand medical knowledge and were published at the highest level of clinical experience and at the most attractive level of understanding and intelligence for readers and authors. According to their report, the information embedded in case reports would arouse the desire to gain knowledge and conduct research about the new clinical situation (4). The results of these studies were inconsistent with those of the present study. Academic enthusiasm is influenced by several factors, including teaching styles (15), teaching and learning environment, students' interactions with each other (16), professors' intimacy with students (17), individual's feelings towards themselves, personality traits, individual motivation, and satisfaction of learning (18). Therefore, academic enthusiasm is a multi-dimensional structure, and its creation and improvement require a multi-dimensional operational plan and may require psychological techniques, counseling, and educational planning; considering this, it cannot be modified in a short time. Moreover, since midwifery students deal with human life in clinical environments, they experience high levels of stress (19); as a result, the stressful nature of the clinical environment may impact the effectiveness of studying case report articles on academic enthusiasm, resulting in a failure to increase it.

One of the strengths of the current study was the control of interaction bias. To prevent the dissemination of intervention to the control group, the objectives of the research were explained to both groups, and the intervention group was asked not to provide the articles to the control group, while the control group was assured of receiving the articles in the second phase of the study. The limitation of this study was the use of Persian language articles; if, however, translated English articles were also used, the quality of the study would have increased. It is suggested to research the effect of using case report articles with various topics on the academic enthusiasm of medical science students in clinical environments.

Conclusion

The findings of the present study demonstrated that reviewing case report articles had no effect on students' academic enthusiasm. Academic enthusiasm as a multidimensional structure is one of the important components of academic success and is affected by internal and external factors.

Ethical considerations

This study was approved by the Ethics Committee of Ilam University of Medical Sciences (IR. MEDILAM. 1399.030). Informed consent was obtained from all participants.

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Author contributions

Designing the study: EB, AM and NSH. Implementing the intervention and collecting the data: EB, NSH, MO and AA. Analysis: EB, AA and AM. Interpreting the data and writing the manuscript: AM, EB and FKH. All authors approved the final version.

Conflicts of interes

There was no conflict of interest in this study.

Data availability statement

Data used and/or analyzed in the study are available from the corresponding author upon request.

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